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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/622,871

07/17/2003

Masahiro Murasato

791_203 NP

2911

25191

7590

02/04/2005

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EXAMINER

DOUGHERTY, THOMAS M

ART UNIT

PAPER NUMBER

2834

DATE MAILED: 02/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/622,871	Applicant(s) MURASATO ET AL.	
	Examiner Thomas M. Dougherty	Art Unit 2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 2/1/05 (phone interview).
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 2 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 2 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. <u>205</u> . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____. | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeuchi et al. (US 6,396,196) in view of Funemi et al. (JP 2000-261283). Takeuchi et al. show (fig. 3) a piezoelectric/electrostrictive film type (1) device comprising: a substrate formed of a ceramic (see ABSTRACT), and a piezoelectric/electrostrictive operation portion (5) in which at least one piezoelectric/electrostrictive layer (5) and at least one pair of electrodes (4, 6) electrically connected to the piezoelectric/electrostrictive layer (5) are stacked on the substrate (2).

Takeuchi et al. do not note that their device includes a highly water repellent surface formed on at least one of outer surface of the piezoelectric/electrostrictive layer and an upper electrode of said at least one pair of electrodes.

Funemi et al. show (fig. 1) a piezoelectric/electrostrictive film type (1) device comprising: a piezoelectric/electrostrictive operation portion (5) in which at least one piezoelectric/electrostrictive layer (5) and at least one electrode (3) electrically connected to the piezoelectric/electrostrictive layer (5).

Art Unit: 2834

Funemi et al. further show a highly water repellent surface (2) that is formed on at least one of outer surface of the piezoelectric/electrostrictive layer (5) and an upper electrode (3).

Said highly water repellent surface (2) is modified in such an extent that infiltration of moisture into micro-pores opened in at least one of the outer surface of the piezoelectric/electrostrictive layer (5) and the upper electrode (3), and/or into a gap between the substrate and the piezoelectric/electrostrictive layer (5) is sufficiently inhibited.

Funemi et al. do not show at least two electrodes in a stack configuration with their piezoelectric/electrostrictive substrate. It is unknown whether or not their substrate is a ceramic material specifically.

It would have been obvious to one having ordinary skill in the art to employ the highly water repellent surface of Funemi et al., which is modified so that infiltration of moisture into micro-pores opened in the outer surface of the piezoelectric/electrostrictive layer or into gaps between the substrate and the piezoelectric/electrostrictive layer is sufficiently inhibited, forming it on the outer surface of at least the piezoelectric/electrostrictive layer or the upper electrode, in the device of Takeuchi et al. in order to provide a device superior in resistance to stresses caused by use and weather, as noted by Funemi et al. Such a design would lengthen the lifetime of the device, thereby reducing replacement costs.

Application/Control Number: 10/622,871

Page 4

Art Unit: 2834

Direct inquiry to Examiner Dougherty at (571) 272-2022.

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February 1, 2005

Thomas M. Dougherty

**TOM DOUGHERTY
PRIMARY EXAMINER**